

## Inspection, Measuring and Test Equipment (IM&TE)

Purchaser/ User

## METROLOGY SYSTEM

Dryden Flight Research Center

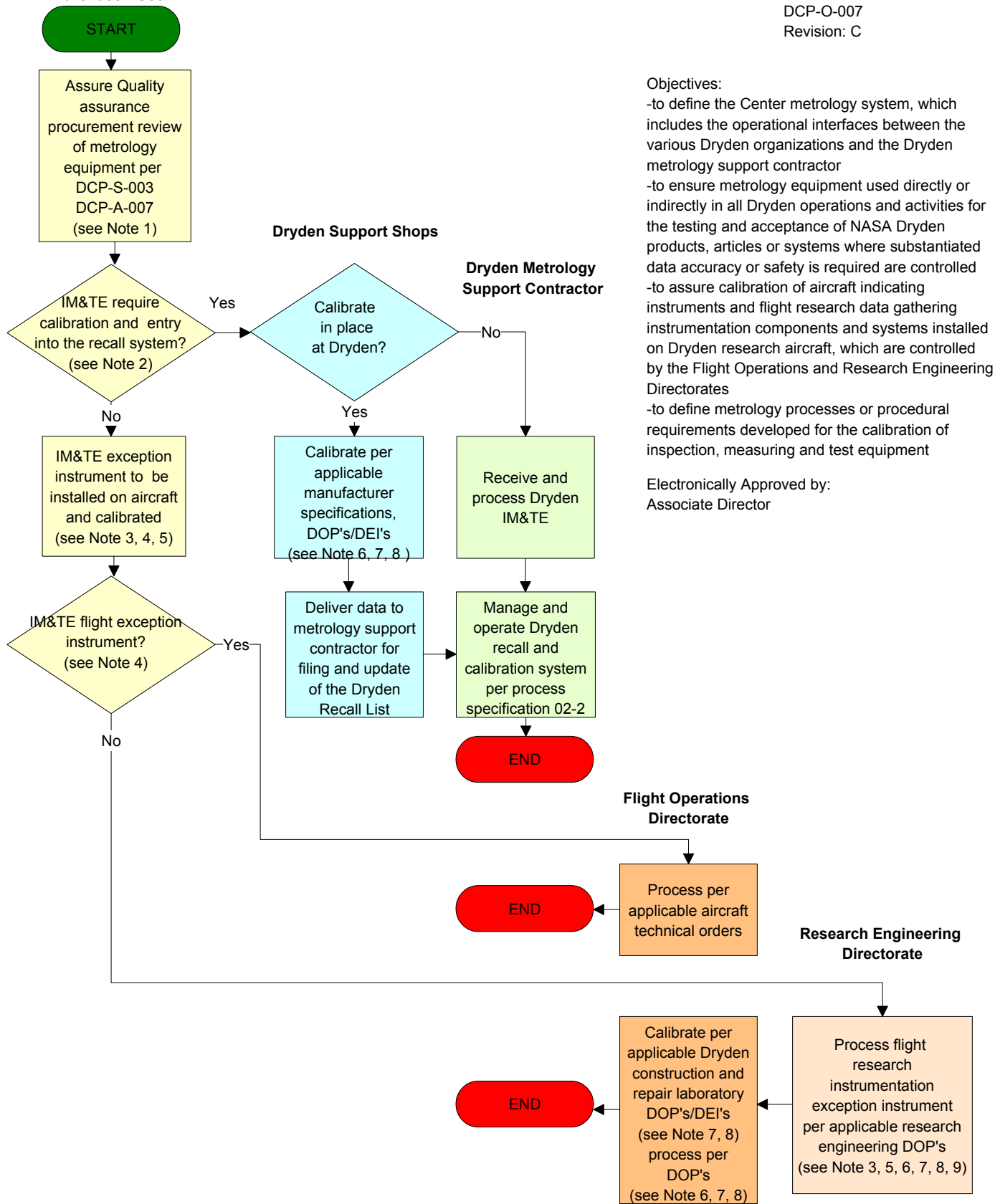
DCP-O-007

Revision: C

### Objectives:

- to define the Center metrology system, which includes the operational interfaces between the various Dryden organizations and the Dryden metrology support contractor
- to ensure metrology equipment used directly or indirectly in all Dryden operations and activities for the testing and acceptance of NASA Dryden products, articles or systems where substantiated data accuracy or safety is required are controlled
- to assure calibration of aircraft indicating instrumentation components and systems installed on Dryden research aircraft, which are controlled by the Flight Operations and Research Engineering Directorates
- to define metrology processes or procedural requirements developed for the calibration of inspection, measuring and test equipment

Electronically Approved by:  
Associate Director



**Note 1**

**ALL NASA DFRC DIRECTORATE CHIEFS AND CODE X STAFF ORGANIZATIONS WHO CALIBRATE OR UTILIZE METROLOGY EQUIPMENT SHALL DESIGNATE CALIBRATION REPRESENTATIVES WITHIN THEIR DIRECTORATE WHO SHALL INSURE THE FOLLOWING WITHIN THEIR ORGANIZATION:**

- IMPLEMENTATION OF THIS DCP
- THAT ALL METROLOGY EQUIPMENT UTILIZED THROUGHOUT THEIR DIRECTORATE WHERE SUBSTANTIATED DATA ACCURACY IS REQUIRED IS IDENTIFIED AND ENTERED INTO THE METROLOGY DATABASE, AS REQUIRED.
- REVIEW AND APPROVAL OF REQUEST FOR CALIBRATION EXTENSIONS. FOLLOW UP ON EXTENSIONS GRANTED TO INSURE DATA ACCURACY WAS NOT COMPROMISED.
- REVIEW AND APPROVAL OF REQUEST TO REMOVE ITEMS FROM THE RECALL LIST.
- REVIEW AND APPROVAL OF CALIBRATION PROCEDURES FOR SPECIALIZED TEST EQUIPMENT WHEN STANDARD PROCEDURES DO NOT EXIST OR ARE INADEQUATE.
- REVIEW OF THE MONTHLY CALIBRATION DELINQUENCY LIST ENSURING ALL METROLOGY EQUIPMENT WITHIN THEIR DIRECTORATE IS CONTROLLED. INITIATE IMMEDIATE ACTION TO ENSURE DELINQUENT METROLOGY EQUIPMENT IDENTIFIED IS LOCATED, PLACED OUT OF SERVICE AND DELIVERED TO THE CALIBRATION CONTRACTOR.
- ENSURE THE FLIGHT SAFETY OFFICE IS NOTIFIED WHEN METROLOGY EQUIPMENT LABELED AND CONTROLLED FROM AN OUTSIDE SOURCE IS TO BE UTILIZED.
- PROVIDE ENGINEERING SUPPORT TO DRYDEN'S CALIBRATION ACTIVITIES AS REQUESTED/REQUIRED.

**THE NASA DFRC CHIEF OF RESEARCH ENGINEERING (R) OR THEIR DESIGNATED REPRESENTATIVES SHALL:**

- HAVE RESPONSIBILITY FOR ENSURING THAT DRYDEN'S RESEARCH DATA GATHERING PROCESSES ASSURE REQUIRED DATA ACCURACY AND RELIABILITY.
- PROVIDE REPRESENTATION TO THE NASA MEASUREMENT ASSURANCE PROGRAM FOR RESEARCH SENSORS.
- PROVIDE REPRESENTATION TO THE NASA METROLOGY TECHNICAL WORKING GROUP, AS MANDATED BY NPD 8730.1

**THE NASA DFRC CHIEF OF FLIGHT OPERATIONS (O) OR THEIR DESIGNATED REPRESENTATIVES SHALL:**

- PROVIDE CONTRACTUAL OVERSIGHT OF THE DFRC CALIBRATION CONTRACTOR.
- BE RESPONSIBLE FOR ESTABLISHMENT AND OPERATION OF THE FLIGHT OPERATIONS RESEARCH AIRCRAFT CALIBRATION AND REPAIR SUPPORT LABORATORY.

**THE NASA FLIGHT SAFETY OFFICE (SF) SHALL:**

- PERFORM PERIODIC SURVEILLANCE AND AUDITS OF CENTER METROLOGY ACTIVITIES PER SF REQUIREMENTS. INFORM MANAGEMENT OF DISCREPANCIES AND AREAS FOR IMPROVEMENT.
- REVIEW THE MONTHLY CALIBRATION DELINQUENCY LIST. INFORM USERS TO LOCATE AND REMOVE DELINQUENT METROLOGY EQUIPMENT FROM SERVICE.
- MAINTAIN A FILE OF ALL METROLOGY EXTENSIONS GRANTED.
- IMPLEMENT AND MONITOR A PROCUREMENT PROCESS THAT INSURES ALL METROLOGY EQUIPMENT UTILIZED TO ENSURE ACCURACY OF THE TEST EQUIPMENT, WHERE SUBSTANTIATED DATA ACCURACY IS REQUIRED IS ROUTED TO THE CALIBRATION FACILITY FOR INITIAL CALIBRATION AND IMPLEMENTATION INTO THE RECALL SYSTEM.
- REVIEW AND CONCUR WITH DFRC USE OF METROLOGY EQUIPMENT LABELED AND CONTROLLED FROM OUTSIDE SOURCES.
- REVIEW AND CONCUR WITH WAIVERS FOR EXTENSIONS TO CALIBRATION INTERVALS.
- REVIEW AND CONCUR WITH REQUESTS TO REMOVE ITEMS FROM THE RECALL LIST.

**THE METROLOGY SUPPORT CONTRACTOR SHALL:**

- DEVELOP AND IMPLEMENT PROCESSES AND PROCEDURES THAT ASSURE COMPLIANCE WITH THE INTENT OF THIS DCP.
- MANAGE AND OPERATE THE CALIBRATION SUPPORT LABORATORY, ASSURING ALL FACETS ARE TRACEABLE TO NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST).
- PERFORM CALIBRATIONS/REPAIRS OR ARRANGE FOR CALIBRATION/REPAIRS OF EQUIPMENT BY OUTSIDE VENDORS WHEN REQUESTED/REQUIRED.
- MANAGE AND OPERATE THE DFRC METROLOGY RECALL SYSTEM.
- IMPLEMENT AND MAINTAIN HISTORICAL AND SERVICE RECORDS FOR ALL METROLOGY ITEMS ENTERED INTO THE METROLOGY DATABASE AND RECALL SYSTEM.
- INSURE ALL NEWLY ACQUIRED METROLOGY EQUIPMENT ENTERED INTO THE RECALL SYSTEM IS IDENTIFIED WITH THE DFRC NEMS BAR CODE LABELING SYSTEM WHEN REQUIRED, OR CONTRACTOR BAR CODE IDENTIFICATION / TRACKING SYSTEM.
- UTILIZE WRITTEN CALIBRATION AND REPAIR INSTRUCTIONS. INSTRUCTIONS SHALL BE ASSEMBLED AND MAINTAINED BY EACH CALIBRATION ACTIVITY. INSTRUCTIONS SHALL BE NUMBERED OR READILY IDENTIFIABLE TO ASSURE QUICK REFERENCE TO A PARTICULAR PROCEDURE, AND SO THE PROCEDURE MAY BE NOTED ON TAGS, HISTORICAL RECORDS, OR SIMILAR DOCUMENTS AS REQUIRED.

**Note 2**

ALL TEST & CRITICAL SAFETY EQUIPMENT USED TO PERFORM MEASUREMENTS WHERE SUBSTANTIATED ACCURACY OR SAFETY IS REQUIRED SHALL BE CALIBRATED. REFERENCE NPD 8730.1, DPD 5339.2

**Note 3**

AIRCRAFT EXCEPTION INSTRUMENTS ARE NOT REQUIRED TO BE INCLUDED IN THE RECALL SYSTEM AND ARE CALIBRATED PER APPLICABLE AIRCRAFT MANUFACTURER PRE &/OR POST FLIGHT REQUIREMENTS

**Note 4**

AIRCRAFT EXCEPTION INSTRUMENTS INCLUDE COCKPIT INDICATORS AND GAUGES WHICH ARE CALIBRATED PER APPLICABLE AIRCRAFT MANUFACTURES PRE/POST FLIGHT AND/OR TECHNICAL ORDER REQUIREMENTS

**Note 5**

AIRCRAFT FLIGHT RESEARCH EXCEPTION INSTRUMENTS ARE CALIBRATED PER APPLICABLE AIRCRAFT RESEARCH ENGINEERING INSTRUMENTATION PRE/POST FLIGHT REQUIREMENTS

**Note 6**

APPLICABLE RI DOP'S. DOP-R-403, DOP-R-404, DOP-R-405, DOP-R-406, DOP-R-407.

**Note 7**

APPLICABLE DOCUMENTS:  
DPD 5339.2  
DCP-O-002  
DOP-O-403, DOP-O-405  
DOP-R-403, DOP-R-404, DOP-R-405, DOP-R-406, DOP-R-407  
PROCESS SPECIFICATION 02-2  
DOP-F-711

**Note 8**

ALL DRYDEN ORGANIZATIONS THAT UTILIZE, AND/OR HAVE DEVELOPED IN HOUSE METROLOGY OPERATING PROCEDURES OR INSTRUCTIONS TO PERFORM CALIBRATIONS THAT UTILIZE SOFTWARE TO CONTROL THE CALIBRATION PROCESS, SHALL DEFINE THE METHOD IN WHICH THE SOFTWARE IS CONTROLLED WITHIN THE APPLICABLE PROCESS AND/OR PROCEDURE USED.  
AIRCRAFT RESEARCH INSTRUMENTATION DEVELOPMENTAL AND SYSTEM CALIBRATION SOFTWARE SHALL BE CONTROLLED PER APPLICABLE RESEARCH ENGINEERING OPERATING PROCEDURES.

**Note 9**

EXCEPTION INSTRUMENTS ARE DEFINED AS INSTRUMENTS AND/OR COMPONENTS OR FLIGHT RESEARCH INSTRUMENTATION AND/OR DATA GATHERING COMPONENTS AND SYSTEMS INSTALLED ON, OR BEING PROCESSED TO BE INSTALLED ON CENTER AIRCRAFT. EXCEPTION INSTRUMENTS ARE CALIBRATED PER VARIOUS FLIGHT OPERATIONS AND/OR RESEARCH ENGINEERING INSTRUMENTATION FLIGHT RESEARCH OPERATING PROCEDURES INCLUDING AIRCRAFT PREFLIGHT AND POSTFLIGHT INSPECTION REQUIREMENTS.

## Document History Page

This page is for informational purposes and  
does not need to be retained with the document

<u>DATE APPROVED</u>	<u>ISSUE</u>	<u>PAGE</u>	<u>AMENDMENT DETAILS</u>
2-9-99	Baseline		
3-19-99	A	1	<b>Modified:</b> fuctions of the Inspection, Measuring and Test Equipment (IM&TE) Purchaser/User <b>Change:</b> to read as: "Assure Quality Assurance procurement review of metrology equipment per DCP-S-003, DCP-A-007" in Column 1, Block 1. <b>Move:</b> out arrow of Column 2, Block 2 from Column 3, Block 1 to Column 3, Block 2 <b>Add:</b> 6, 7 in Column 2, Block 2 <b>Add:</b> 7 in Column 5, Block 1
		2	Corrected formatting and spelling
		3	<b>Deleted:</b> 401& 402 from Notes 6 & 7 <b>Add:</b> DOP-O-405 to Note 7 <b>Change:</b> DCP-O-003 to DCP-O-002
3-24-99	B	1	<b>Deleted:</b> reference to Note 9 from 4th block of IM&TE Purchaser/User
See IDMS Document Master List	C	All	<b>Spell checked:</b> entire document and made corrections as necessary